

What is claimed is:

1. A digital transmission system, for producing a replica of a digital signal comprising at least a first component and a second component, comprising:
an encoder including analysis means for altering said digital signal to obtain a plurality of sub-signals, including at least a first sub-signal and a second sub-signal from said first component and said second component respectively,
signal combination means for combining said first sub-signal and said second sub-signal to obtain a composite sub-signal,
signal generator means for generating an indicator signal indicating that said first sub-signal and said second sub-signal are combined,
transmission means for transmitting said indicator signal, said composite sub-signal, and sub-signals which have not been combined,
receiving means for receiving the signals which were transmitted,
means, responsive to the received indicator signal and composite sub-signal, for generating a signal related to at least one of said first component and said second component, and
a decoder including synthesis means for combining the transmitted sub-signals and the signal related to at least one of said first component and said second component to produce said replica of the digital signal.

2. A system as claimed in claim 1, characterized in that said first and second component represent information relating to the stereo nature of an audio signal.

3. A system as claimed in claim 1, characterized in that said analysis means subdivides said digital signal into sub-signals which are subband signals representing respective frequency subbands and said components.

4. A digital transmission system, for producing a replica of a digital signal

2 comprising at least a first and a second component, comprising a transmitter
3 and a receiver,

4 wherein said transmitter comprises:

5 an encoder including analysis means for filtering said digital signal to
6 obtain subband signals for M subbands, where $M > 1$, said subband signals
7 including a plurality of first subband signals and a plurality of second subband
8 signals from said first component and second component respectively,

9 signal combination means for combining m_1 of said first subband signals
10 respectively with m_1 of said second subband signals from corresponding
11 subbands to obtain m_1 composite subband signals, where $1 < m_1 < M$,

12 signal generator means for generating an indicator signal indicating which
13 said first and second subband signals are combined, and

14 transmission means for transmitting said indicator signal, said composite
15 subband signals, and subband signals which were not combined, and

16 the receiver comprises:

17 receiving means for receiving the signals which have been transmitted,

18 detection means for detecting said indicator signal,

19 derivation means responsive to the received indicator signal, for
20 producing, from the received composite subband signals, derived subband
21 signals related to m_1 of said first subband signals and m_1 of said second
22 subband signals, and

23 a decoder including synthesis means for combining said derived subband
24 signals and the received subband signals which were not combined, to produce
25 said replica of the digital signal.

1 5. A system as claimed in claim 4, wherein said analysis means applies
2 substantially identical filtering to said first and second components to obtain said
3 first and second subbands.

1 6. A system as claimed in claim 4, characterized in that said m_1 of the first
2 subband signals are subband signals for the m_1 highest frequency subbands.

1 7. A system as claimed in claim 4, characterized in that said digital signal
2 represents a first block of samples and a second block of samples, said first
3 component and said second component being first block first and second
4 components, said subband signals being first block subband signals, said m_1 of
5 said first and second subband signals being m_1 of the first block first and second
6 subband signals, said m_1 composite subband signals being m_1 first block
7 composite subband signals, and said replica being a replica of the portion of said
8 digital signal representing said first block of samples,

9 for producing a replica of the portion of said digital signals representing
10 said second block of samples, said analysis means obtains second block
11 subband signals for said M subbands including corresponding pluralities of
12 second block first and second subband signals from second block first and
13 second components respectively,

14 said signal combination means combines in each of a number m_2
15 subbands the second block subband signals from the respective second block
16 first and second components, to obtain m_2 composite signals in said m_2
17 subbands, where m_2 is greater than m_1 ,

18 said signal generator means generates a second block indicator signal
19 identifying said m_2 subbands,

20 said transmitter transmits said composite signals in said m_2 subbands,
21 said second block indicator signal, and second block subband signals which
22 were not combined, and

23 said derivation means derives said m_2 composite signals in said m_2
24 subbands from the second block signal received, and derives from said m_2
25 composite signals in said m_2 subbands, in response to said second block
26 indicator signal, subband signals in said m_2 subbands corresponding to said

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~~second block subband signals which were combined.~~

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8. A system as claimed in claim 7, characterized in that said m_2 subbands are the m_2 highest subbands.

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9. A system as claimed in claim 6, characterized in that said first and second components are respective stereo audio signals.

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10. A system as claimed in claim 4, characterized in that said transmitter comprises a scale factor determiner, for determining a scale factor for time equivalent subband signal blocks of the first and second components in the subband signals; and means for transmitting these scale factors, and

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said detector in the receiver is adapted to detect the scale factors which have been transmitted.

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11. A system as claimed in claim 2, characterized in that said transmitter comprises means for quantizing the time equivalent signal blocks of the subband signals and the one or more composite signals.

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12. A transmitter, for transmitting signals representative of a digital signal comprising at least a first component and a second component, over a transmission medium, comprising:

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an encoder including analysis means for altering said digital signal to obtain a plurality of sub-signals, including at least a first sub-signal and a second sub-signal from said first component and said second component respectively,

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signal combination means for combining said first sub-signal and said second sub-signal to obtain a composite sub-signal,

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signal generator means for generating an indicator signal indicating that said first sub-signal and said second sub-signal are combined,

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11 transmission means for transmitting said indicator signal, said composite
12 sub-signal, and sub-signals which have not been combined.

1 13. A transmitter as claimed in claim 12, characterized in that said first and
2 second components are respective stereo audio signals.

1 14. A transmitter as claimed in claim 12, characterized in that said analysis
2 means filters said digital signal to provide sub-signals which are subband signals
3 representing said digital signal in M respective frequency subbands, where $M >$
4 1, said subband signals including a plurality of first subband signals and a
5 plurality of second subband signals from said first component and second
6 component respectively,

7 said signal combination means combines m_1 of said first subband signals
8 respectively with m_1 of said second subband signals from corresponding
9 subbands to obtain m_1 composite subband signals, where $1 < m_1 < M$, and

10 said indicator signal indicates which said first and second subband signals
11 are combined.

1 15. A transmitter as claimed in claim 14, characterized in that said digital
2 signal represents a first block of samples and a second block of samples, said
3 first component and said second component being first block first and second
4 components, said subband signals being first block subband signals, said m_1 of
5 said first and second subband signals being m_1 of the first block first and second
6 subband signals, said m_1 composite subband signals being m_1 first block
7 composite subband signals, and said replica being a replica of the portion of said
8 digital signal representing said first block of samples,

9 for producing a replica of the portion of said digital signals representing
10 said second block of samples, said analysis means obtains second block
11 subband signals for said M subbands including corresponding pluralities of

second block first and second subband signals from second block first and second components respectively,

said signal combination means combines in each of a number m_2 subbands the second block subband signals from the respective second block first and second components, to obtain m_2 composite signals in said m_2 subbands, where $m_1 < m_2 \leq M$,

said signal generator means generates a second block indicator signal identifying said m_2 subbands, and

said transmission means transmits said m_2 composite signals, said second block indicator signal, and second block subband signals which were not combined.

16. A transmitter as claimed in claim 14, wherein said analysis means applies substantially identical filtering to said first and second components to obtain said first and second subbands.

17. A transmitter as claimed in claim 14, characterized in that said m_1 of the first subband signals are subband signals for the m_1 highest frequency subbands.

18. A transmitter as claimed in claim 14, characterized in that said transmitter comprises a scale factor determiner, for determining a scale factor for time equivalent subband signal blocks of the first and second components in the subband signals; and means for transmitting these scale factors.

19. A receiver for producing a replica of a digital signal including a first component and a second component, from digital signal components comprising at least one composite sub-signal, an indicator signal indicating that at least a first and a second sub-signal are combined, and a plurality of subsignals not

5 including said first and second sub-signal, said digital signal components being
6 representative of said digital signal,
7 receiving means for receiving said digital signal components,
8 means, responsive to the received indicator signal and composite sub-
9 signal, for generating a signal related to at least one of said first component and
10 said second component, and
11 a decoder including synthesis means for combining the transmitted sub-
12 signals and the signal related to at least one of said first component and said
13 second component to produce said replica of the digital signal.

1 20. A receiver as claimed in claim 19, characterized in that said first and
2 second components are respective stereo audio signals.

1 21. A receiver as claimed in claim 19, characterized in that said composite
2 sub-signal represents a first subband signal and a second subband signal for a
3 combined subband, and said sub-signals are subband signals representing
4 respective frequency subbands other than said combined subband, and
5 said means for generating comprises derivation means for deriving said
6 composite subsignal from the signal received and for deriving from said
7 composite signal, in response to the indicator signal, subband signals
8 corresponding to said first component and said second component.

1 22. A receiver as claimed in claim 21, characterized in that the digital signal
2 components comprise a plurality of said composite sub-signals representing a
3 plurality of combined subbands respectively, and a scale factor for time
4 equivalent signal blocks of the first component and the second component,
5 said detector in the receiver is adapted to detect said scale factor, and
6 said derivation means is responsive to said scale factor.

1 23. An encoder for encoding one or more input signals, comprising
2 steering means responsive to said one or more input signals for generating
3 a composite signal having its frequency spectrum in a plurality of
4 frequency bands, or
5 one or more individual signals and, under certain conditions, a
6 composite signal, said one or more individual signals and said composite
7 signal having their respective frequency spectra in one frequency band or
8 in a plurality of frequency bands, and
9 control means responsive to said steering means for generating a steering
10 control signal having one or more components relating to said one frequency
11 band of said second-recited composite signal or said plurality of frequency bands
12 of said first or second-recited composite signal.

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